LINCOLN
APPLIED GEOLOGY, INC.
Environmental Consultants

April 5, 1999

APR 8 10 21 AM '99

Mr. Paul Dandrade
Cumberland Farms Inc.
777 Dedham Street
Canton, Massachusetts 02021-9118

RE: Cumberland Farms Inc., Station # 4010 (VDEC Site# 98-2415), 20 South Main Street, Barre, VT - Subsurface Contaminant Investigation Report

Dear Mr. Dandrade:

Lincoln Applied Geology, Inc. (LAG) is pleased to present this Subsurface Contaminant Investigation Report for Cumberland Farms Inc. (CFI) Station # 4010 (VDEC Site # 98-2415) located at 20 South Main Street in Barre, Vermont. In response to the discovery of gasoline contaminated soils during the replacement of the Underground Storage Tank (UST) system, the Vermont Department of Environmental Conservation (VDEC) Sites Management Section (SMS) requested that a subsurface contaminant investigation be performed to determine the extent and magnitude of the petroleum contamination beneath the site. The requested contaminant investigation was performed by LAG in December, 1998 and January, 1999, and is attached. The enclosed report includes well logs, monitoring data, ground water quality results, observations made during the sensitive receptor survey, and our conclusions and recommendations for the site.

Results of the investigation show that ground water beneath the site has not been impacted by the petroleum contamination previously detected in the soils surrounding the UST system piping. There are no contaminant impacts to potential sensitive receptors. Based on data collected during the subsurface investigation, we recommend conducting a second complete site monitoring and water quality sampling event in May, 1999 to confirm the current levels. If the results are similar to those previously noted then we will recommend that the site be granted Sites Management Activities Completed (SMAC) status.

Please do not hesitate to call me or Richard S. Vandenberg, Project Manager, at (800) 477-4384, if you have any questions or comments regarding the attached report.

Sincerely,
Lincoln Applied Geology, Inc.

Jason S. Barnard
Geologist

JSB/jb
enclosures

cc: Chuck Schwer

Subsurface Contaminant Investigation Report

Cumberland Farms Inc., Station # 4010
20 South Main Street, Barre, Vermont
(VDEC Site #98-2415)

Prepared for:

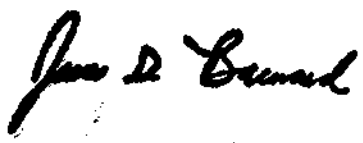
Cumberland Farms Inc.
777 Dedham Street
Canton, Massachusetts 02021-9118
Contact: Paul Dandrade
Phone: (781) 828-4900 ext. 3416

Prepared by:

Lincoln Applied Geology, Inc.
Revell Drive
Lincoln, Vermont 05443
Contact: Jason S. Barnard
Phone: (802) 453-4384

April 5, 1999

Prepared by:



Jason S. Barnard
Geologist

Reviewed and Approved by:

Stephen Revell, CPG
Senior Hydrogeologist

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Lincoln Applied Geology, Inc
Environmental Consultants

163 Revell Road • Lincoln, Vermont 05443 • (802) 453-4384 • FAX (802) 453-5399

Executive Summary

In early May 1998, CFI and subcontractors completed the removal, closure, and replacement of the underground storage tank (UST) system piping at CFI facility (#4010), which is located at 20 South Main Street in Barre, Vermont. Lincoln Applied Geology Inc. (LAG) conducted the assessment work between May 6 and May 12, 1998 and completed the UST closure report, which was submitted to the Vermont Department of Environmental Conservation (VDEC), Underground Storage Tank Program (USTP) on June 8, 1998. During the assessment all UST distribution and ventilation piping was noted in good condition with no apparent holes and/or perforations. However, during the upgrade activities a small (six gallons of gasoline) release did occur from a product line which was immediately cleaned up via soil removal. During the remaining piping removal and assessment activities excavated soils were screened with a photoionization detector (PID) for the presence of volatile organic compounds (VOCs). Approximately 60 cubic yards (yds^3) of the most highly contaminated soils (including the soil from the product line release) were removed and temporarily stockpiled on-site. Following VDEC approval, the gasoline contaminated soils were transported to the MTS Environmental, Inc. facility in Epsom New Hampshire on May 19 ,1998, where they were thermally treated.

Based on the results of the May UST piping upgrade, the Sites Management Section (SMS) of the Vermont Department of Environmental Conservation (VDEC) requested that additional work be performed to further define the extent and magnitude of the petroleum contamination present beneath the site.

LAG installed four monitor wells on-site on December 22, 1998 and January 8, 1999 in order to define the extent and magnitude of the contamination. Two wells (MW-1 and MW-3) were installed sidegradient of the UST and dispenser island areas and two wells (MW-2 and MW-4) were installed at locations downgradient of the UST and dispenser island areas. LAG also conducted a sensitive receptor survey by monitoring the ambient air space of the CFI building and downgradient commercial building basements. Following installation, the wells were properly developed and sampled. A complete stadia survey was then performed on all monitor wells and pertinent site structures.

On January 28, 1999 LAG was on-site to measure static ground water levels, PID evaluate each monitor well headspace, and collect ground water samples from the newly installed monitor wells. All samples were analyzed for the presence of volatile organic compounds (VOCs) by EPA 8260 and for total petroleum hydrocarbons (TPH) by EPA 8015.

Review of the January 28th water quality data shows that no petroleum related VOCs and/or TPH concentrations were quantified above method detection limits in any of the samples. Based on the data collected during this initial subsurface investigation, we recommend that a second complete site monitoring and ground water sampling event be performed in May, 1999 to confirm these non-existent levels. It is our professional opinion that the limited quantity of contaminated soils, which remain in the vicinity of the dispenser island area do not pose a significant threat to human health or to any surrounding sensitive receptors (i.e. the underlying ground water).

Lincoln Applied Geology, Inc
Environmental Consultants

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Site Description

Cumberland Farms, Inc. (CF)I facility #4010 is located at 20 South Main Street in Barre, Vermont (**Figure 1**). The property is bound by Vermont Route 14 (South Main Street) to the west, Vogue Salon to the north and south, and the Barre City Hospital Corporation to the east. The one-story, slab on-grade building is served by municipal water and sewer. **Figure 2** is a detailed site map showing pertinent features of the site.

Site History

CFI and their subcontractors completed the excavation, removal, and replacement of all UST system distribution piping in May, 1998. During the work, LAG provided oversight and assessment of the piping and soils. The UST Permanent Closure Form, photoionization detector (PID) data, and photographs of the site were submitted by LAG to the Vermont Department of Environmental Conservation (VDEC), Underground Storage Tank Program (USTP) in a report dated June, 8 1998. Excavated soils were screened for the presence of VOCs using a properly calibrated photoionization detector (PID) equipped with a 10.2 electron volt (eV) lamp. Data collected during the UST piping upgrade show that soils in the vicinity of the dispenser island area contained elevated concentrations of VOCs. Additionally, during the upgrade activities a small release (approximately 6 gallons) of gasoline product occurred between the UST and dispenser island area. As a result of this release, soils containing PID readings above background (BG) levels were excavated and removed from the spill area. In order to accommodate the new distribution piping and appropriate backfill material, the most highly contaminated soils were removed from the dispenser island area. As a result of this work, approximately 60 cubic yards (yds^3) of the most highly contaminated soils were removed from the excavation and ultimately disposed of at MTS Environmental in Epsom, New Hampshire (a permitted asphalt batching facility). Due to the contamination remaining in soils in the vicinity of the dispenser island area the VDEC, SMS requested that additional work be performed to further define the extent and degree of the soil and possibly ground water contamination beneath the site.

Monitor Well Installation

Three monitor wells (MW-1, MW-2, and MW-4) were drilled and installed using hollow stem auger drilling techniques on December 22, 1998 by T&K Drilling Inc. Due to difficult drilling conditions (i.e. refusal on large cobbles or boulders) MW-3 was not able to be installed. Due to the importance of MW-3 (side/downgradient of the dispenser island area), Tri-State Drilling and Boring was contracted to finish the well using air rotary drilling techniques. The locations of the four monitor wells are shown on **Figure 2**. A description of the sediments encountered during the drilling, monitor well construction details, and PID data from the split-spoon samples, are included in the detailed well logs which are included as **Appendix A**.

Site Geology

Soils encountered during drilling include very fine to medium sands, overlying medium to coarse sands, gravel, boulders, and a trace of silt. This material was deposited fluvially by the Stevens Branch of the Winooski River, which is located approximately 400 feet to the west of the site.

Review of the Centennial Geologic Map of Vermont (C.G. Doll, 1961) indicates that the underlying bedrock formation is that of the Devonian Barton River Formation (360 to 400 million years ago). The Barton River Formation consists of a interbedded siliceous limestone and phyllite.

Site Survey and Monitoring

On January 8, 1999, LAG conducted a stadia survey of MW-1, 2, 3, 4, and other site features pertinent to the subsurface investigation. On January 28th, LAG collected ground water level measurements from all monitor wells using an electronic interface probe capable of measuring 0.01 feet of free-floating petroleum product. LAG also assayed the headspace of each monitor well using a properly calibrated PID for the presence of petroleum related VOCs. Review of the collected data indicates that no free-floating petroleum product was present in any of the wells. The depth to ground water is approximately 21.5 feet across the site. A summary of ground water elevation data from January 28th is presented in **Table 1**, and PID assays are included in **Table 2**. Review of **Table 2** indicates that the well headspace PID readings collected on January 28th were all at background (BG). The lack of significant PID measurements suggests that no significant vadose zone contamination is present beneath the site.

Site Hydrogeology

Ground water elevation data from January 28th was used to develop a Ground Water Contour Map (**Figure 3**). Review of **Figure 3** shows that ground water flows across the site in a general north/northwesterly direction along a relatively flat gradient of 0.005 feet/foot.

Water Quality Sampling

On January 28, 1999, LAG collected water quality samples from MW-1, 2, 3, and 4 using industry accepted methods. All samples were analyzed along with a trip blank for the presence of VOCs via EPA Method 8260 and for total petroleum hydrocarbons (TPH) via EPA Method 8015 [gasoline range organics (GRO)] at Toxicon Laboratories Inc. in Bedford, Massachusetts.

The water quality results are summarized in **Table 3** and are presented on the Water Quality Summary Map included as **Figure 3**. Copies of the laboratory reports are included as **Appendix B**. Review of **Table 3, Figure 3,** and **Appendix B** indicate that no detectable concentrations of VOCs and/or TPH were present in the ground water samples collected. Based on this water quality data, it is clear that ground water beneath the site has not been impacted by the residual petroleum contamination noted in soils during the UST system piping upgrade.

Sensitive Receptor Survey

On December 22, 1998 LAG conducted a sensitive receptor survey of the site and surrounding commercial properties. Potential sensitive receptors include the indoor air of the CFI building, the Vogue Salon, and the Groleau Construction building. The CFI building and surrounding commercial/residential buildings are all served by municipal water and sewer. Furthermore, indoor ambient air impacts are highly unlikely because the CFI building is constructed of a concrete slab on-grade. During the survey all on-site and downgradient building structures, and the one catch basin near the northwest corner of the dispenser island area were screened with a PID for the presence of VOCs. The collected data is summarized and presented in **Table 2**. Review of the collected data indicates that no PID readings above BG levels were

present in any of the evaluated basements or the catch basin. As a result, it is obvious that the indoor air space of on-site and downgradient buildings has not been impacted by the limited amount of residual contamination identified.

Based upon these data, LAG strongly believes that the health related risks associated with the small amount of residual gasoline contamination are non-existent.

Summary of Findings

Based on the data collected, observations, and the evaluations presented, the following conditions exist at the site:

1. A limited amount of gasoline related contamination remains in soils in the vicinity of the present day dispenser island area.

2. Ground water quality data indicates the ground water beneath the site has not been impacted.

3. There is no risk to human health or to the environment from the remaining soil contamination.

Recommendations

Based on these findings, the following recommendations are made:

1. Conduct a second complete site monitor and ground water sampling round in May 1999 to confirm the current nondetect levels.

2. Prepare a summary report that presents the May 1999 data from the second site monitoring and ground water sampling event. If the data is similar to that previously seen, we will formally request that Sites Management Activities Completed (SMAC) status be granted to the site. A cost estimate to implement the second monitoring and sampling round is included as **Appendix C**.

F:\CLIENTS\CUMBRLND.FRM\4010BARO\SUM0399.RPT

Project: CFI - Station #4010
Location: Barre, Vermont

Table 1
VDEC Site # 98-2415
Sheet 1 of 1

Ground Water Elevation/Product Level (feet)

Data Point	TOC	01/28/99					
MW-1	101.15	80.00					
MW-2	100.66	79.36					
MW-3	100.70	79.45					
MW-4	100.00	79.00					

Notes:
1 - Elevation datum assumed
2 - Reference elevation is elevation of top of PVC well casing
Light Grey Cell = DRY
Dark Grey Cell = Inaccessible

Project: CFI - Station #4010
Location: Barre, Vermont

Table 2
VDEC Site # 98-2415

Photoionization Results (PID - ppm)

Data Point	12/22/98	01/28/99					
MW-1		BG					
MW-2		BG					
MW-3		BG					
MW-4		BG					
CFI Store	BG						
Vogue Salon	BG						
Groleau Construction	BG						
Catch Basin	BG						

Notes:
BG - Background
SL - Saturated Lamp

Project: CFI - Station #4010
Location: Barre, Vermont

Table 3
VDEC Site # 98-2415
Sheet 1 of 1

Ground Water Quality Results (ppb)

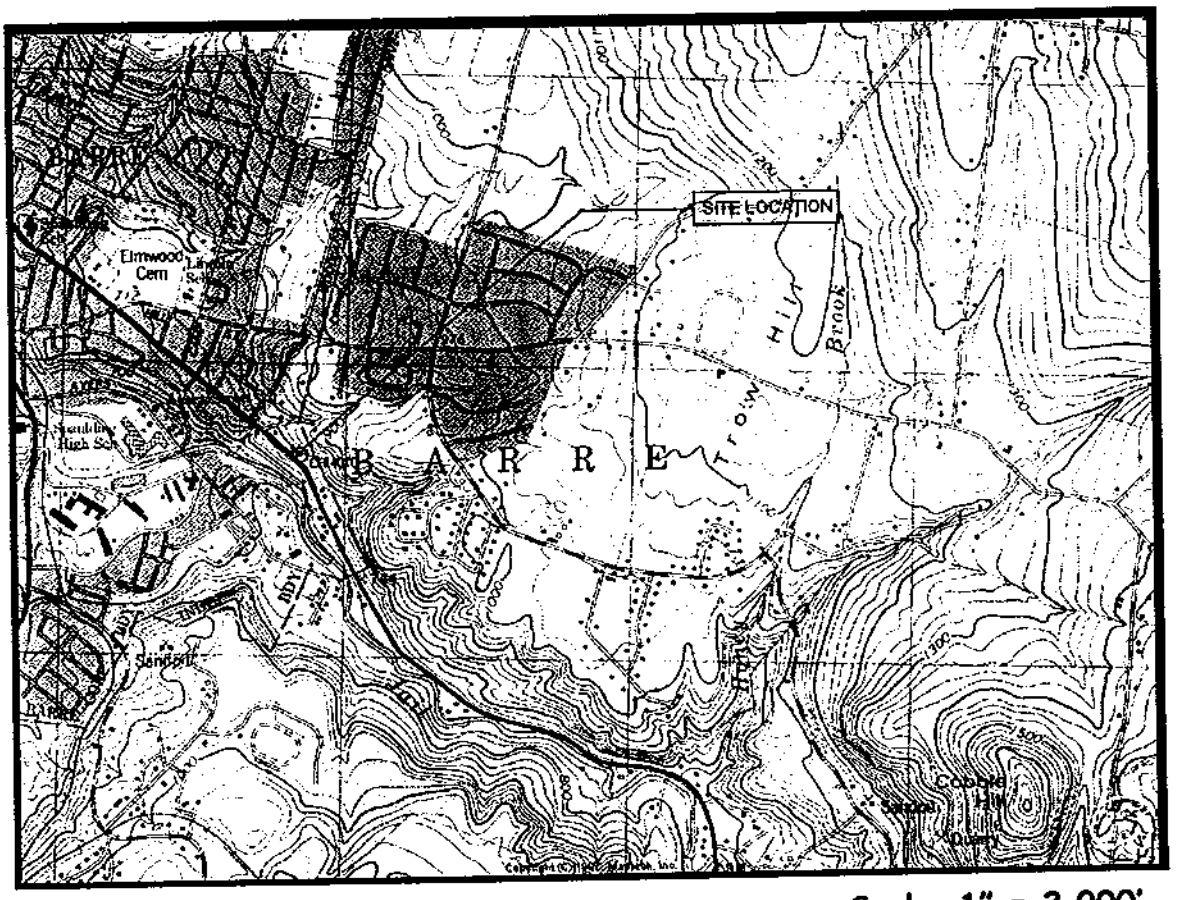
Data Point	Compound	01/28/99				
MW-1	Benzene	<5				
	Toluene	<5				
	Ethylbenzene	<5				
	Xylenes	<10				
	MTBE	<5				
	BTEX	<25				
	BTEX + MTBE	<30				
	TPH (8015)	<0.01				
MW-2	Benzene	<5				
	Toluene	<5				
	Ethylbenzene	<5				
	Xylenes	<10				
	MTBE	<5				
	BTEX	<25				
	BTEX + MTBE	<30				
	TPH (8015)	<0.01				
MW-3	Benzene	<5				
	Toluene	<5				
	Ethylbenzene	<5				
	Xylenes	<10				
	MTBE	<5				
	BTEX	<25				
	BTEX + MTBE	<30				
		<0.01				
MW-4	Benzene	<5				
	Toluene	<5				
	Ethylbenzene	<5				
	Xylenes	<10				
	MTBE	<5				
	BTEX	<25				
	BTEX + MTBE	<30				
	TPH (8015)	<0.01				

NOTES:
< - Contaminant not detected at specified detection limit

Figure 1

Cumberland Farms, Inc.
Station #4010, VDEC Site #98-2415
Barre, Vermont

GENERAL LOCATION MAP



Scale 1" = 2,000'

BARRE EAST, VT.
NW/4 EAST BARRE 15' QUADRANGLE
44072-B4-TF-024

1981
PHOTOREVISED 1988

QUADRANGLE LOCATION DMA 6572 III NW - SERIES V813

LINCOLN
APPLIED GEOLOGY, INC.
Environmental Consultants

MAPTECH Digital Mapping Technology

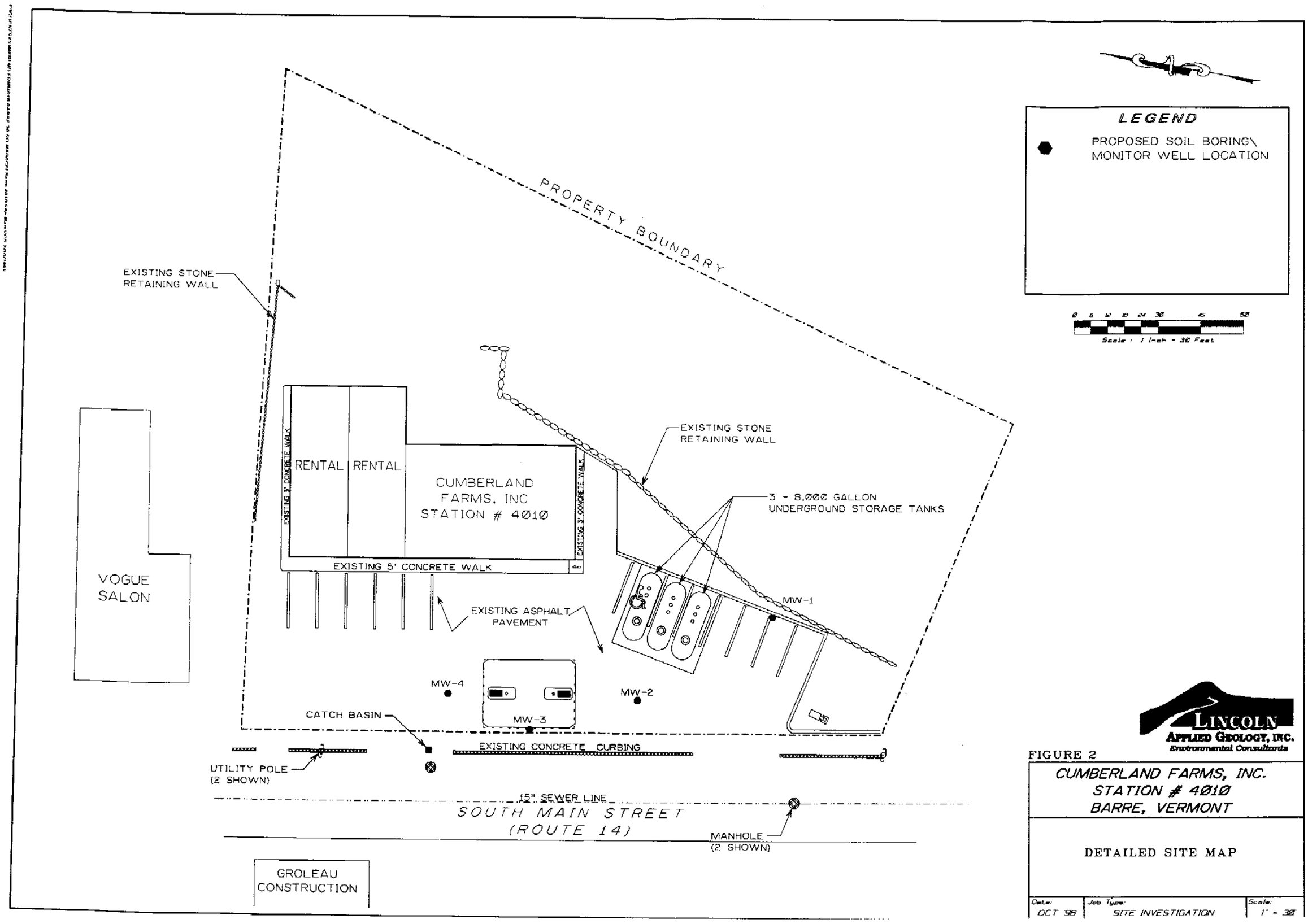


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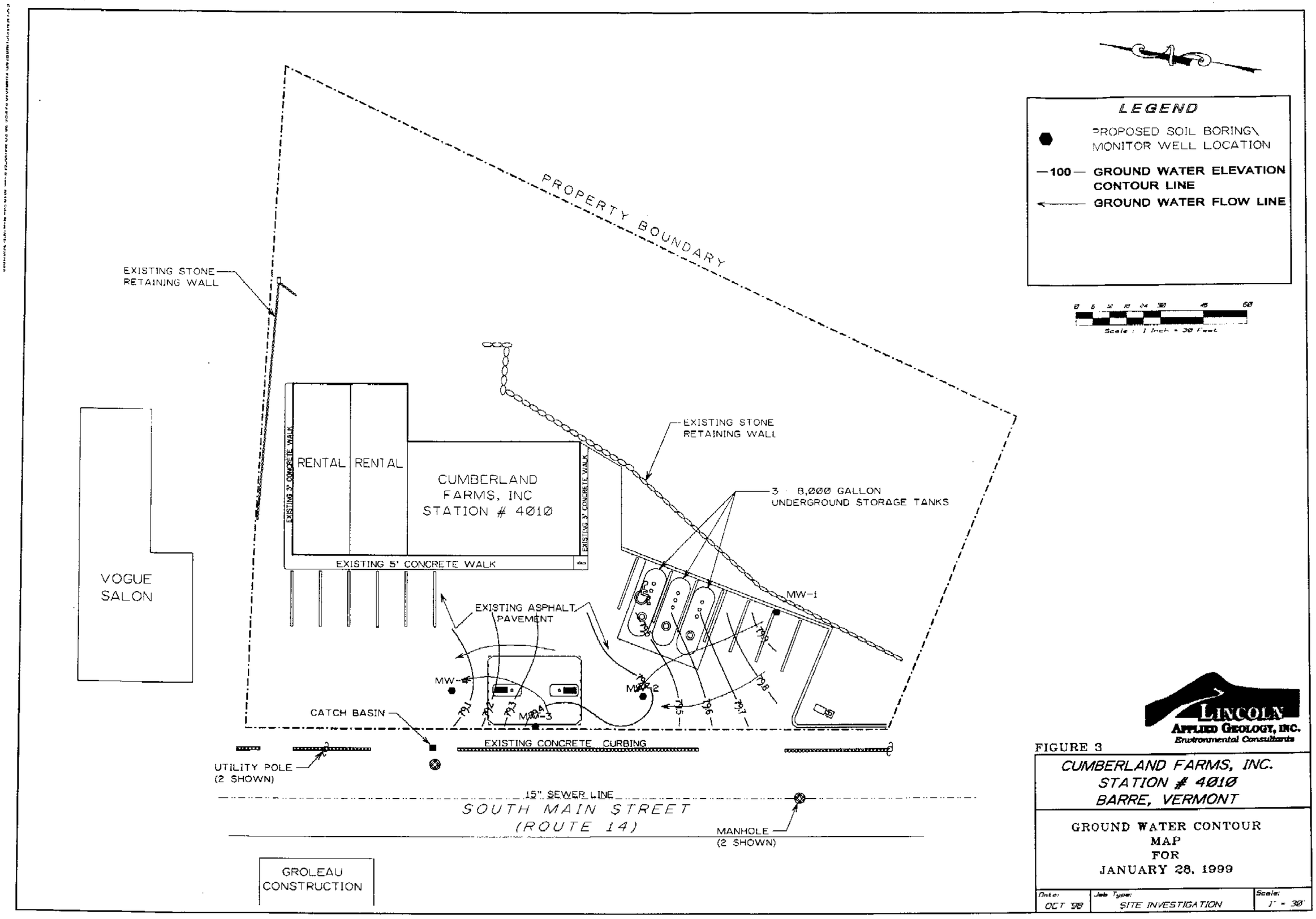
FIGURE 2

CUMBERLAND FARMS, INC.
STATION # 4010
BARRE, VERMONT

DETAILED SITE MAP

Date:	Job Type:	Scale:
OCT '98	SITE INVESTIGATION	1" = 30'



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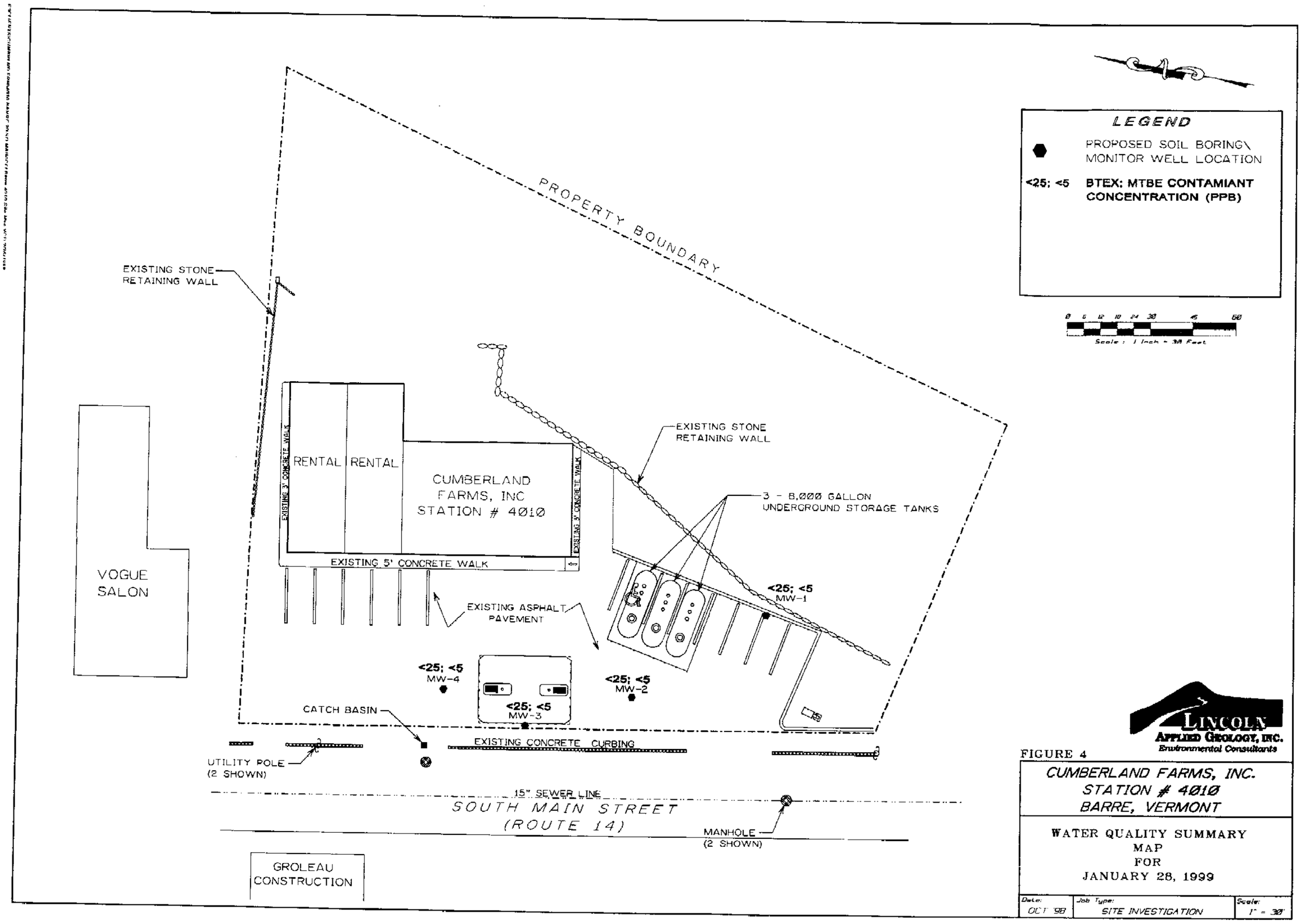
Environmental Consultants

FIGURE 3

CUMBERLAND FARMS, INC.
STATION # 4010
BARRE, VERMONT

GROUND WATER CONTOUR MAP
FOR
JANUARY 28, 1999

Date:	Job Type:	Scale:
OCT '98	SITE INVESTIGATION	1" = 30'



LINCOLN APPLIED GEOLOGY, INC.
Environmental Consultants

FIGURE 4

CUMBERLAND FARMS, INC.
STATION # 4010
BARRE, VERMONT

WATER QUALITY SUMMARY MAP
FOR
JANUARY 28, 1999

Date:	Job Type:	Scale:
OCT '98	SITE INVESTIGATION	1" = 30'

Appendix A

Detailed Well Logs

WELL LOG

WELL:	MW-1
LOCATION:	Cumberland Farms, Inc. - Barre, VT (Station #4010), near southeast corner of UST area.
DRILLER:	T&K Drilling and Boring
HYDROGEOLOGIST:	Jason Barnard, Lincoln Applied Geology, Inc.
DATE:	December 22, 1998

Soils Description: **(BG = Background [0.2], SL = Saturated Lamp [>500], ppm = Parts Per Million)**

Depth	Description	PID (ppm)
0.0 - 0.5'	Grey, fine sandy silt, weak blocky structure, dry.	BG
0.5' - 2.0'	Brown, very fine sandy loam, some silt, weak blocky structure, dry.	BG
5.0' - 5.8'	Brown, medium sand, dry.	BG
5.8' - 7.0'	Light brown, very fine sand, trace silt, dry.	BG
10.0' - 12.0'	Orangish brown, medium to coarse sand and medium gravel, dry.	BG
15.0' - 16.5'	Light brown to grey, medium sand and gravel, trace silt, dry.	BG
16.5' - 17.0'	Grey, medium sand, loose granular structure, dry.	BG
20.0' - 22.0'	Brown, fine to medium sand, some fine to medium gravel, trace silt, dry until 22' then moist.	BG
25.0' - 27.0'	Grey, medium to coarse sand, some medium to large gravel, saturated.	BG

Well Construction:

Bottom of Boring:	27.0'
Bottom of Well:	27.0'
Well Screen:	10.0' (17.0 - 27.0') 2.0" diameter, sch. 40 PVC (0.010" slot)
Solid Riser:	16.5' (0.5' - 17.0') 2.0" diameter, sch. 40 PVC
Sand Pack:	12.0' (15.0' - 27.0') # 2 sand
Bentonite Seal:	1.0' (14.0' - 15.0') chips
Backfill:	13.5' (0.5 - 14.0') drill cuttings
Well Box:	Cemented flush

WELL LOG

WELL: MW-3
LOCATION: Cumberland Farms, Inc. - Barre, VT (Station #4010), side/downgradient of dispener island area.
DRILLER: T&K Drilling Inc. and Tri-State Drilling and Boring.
HYDROGEOLOGIST: Jason Barnard, Lincoln Applied Geology, Inc.
DATE: January 8, 1999

Soils Description: (**BG = Background** [0.2], **SL = Saturated Lamp** [>500], **ppm = Parts Per Million**)

Depth	Description	PID (ppm)
5.0' - 7.0'	Brown, fine to medium sand, some silt, trace small gravel, dry	BG
10.0' - 12.0'	Dark brown, fine to medium sand, trace silt and medium gravel, dry.	BG
15.0' - 16.0'	Brown, fine to medium sand, some silt and large rock fragments, dry.	BG
16.0' - 20.0'	Brown, fine to medium sand and gravel, trace silt, dry.	BG
20.0' - 27.0'	Brown, medium to coarse sand, some medium gravel, saturated.	BG

Well Construction:

Bottom of Boring: 27.0'
Bottom of Well: 27.0'
Well Screen: 10.0' (17.0 - 27.0') 2.0" diameter Sch. 40 PVC, (0.010" slot)
Solid Riser: 16.5' (0.5 - 17.0') 2.0" diameter Sch. 40 PVC
Sand Pack: 12.0' (15.0 - 27.0') #1 sand
Bentonite Seal: 3.0' (12.0 - 15.0') chips
Backfill: 11.0' (1.0 - 12.0') drill cuttings
Well Box: Cemented flush

Note: Refusal at 16 feet below ground surface during hollow stem auger drilling, completed boring and well installation on January 8, 1999.

Appendix B

Laboratory Reports for January 28, 1999

 TOXIKON CORP. REPORT Work Order # 99-01-565

Received: 01/30/99 02/10/99 16:02:43

REPORT LINCOLN APPLIED GEOLOGY
TO REVELL DRIVE
LINCOLN, VT 05443
802-453-4384 FAX: 5399
ATTEN JASON BARNARD

PREPARED TOXIKON CORPORATION
BY 15 WIGGINS AVE
BEDFORD, MA 01730
CERTIFIED BY
ATTEN PAUL LEZBERG
PHONE (781)275-3330 CONTACT JOHNM

CLIENT LINCOLN VT SAMPLES 5
COMPANY LINCOLN APPLIED GEOLOGY
FACILITY REVELL DRIVE
LINCOLN, VT 05443

MA CERT # M-MA064: TRACE METALS, SULFATE,CYANIDE,RES. FREE CHLORINE, Ca, TOTAL ALK., TDS, pH, THMs, VOC, PEST.,NUTRIENTS. DEMAND. O&G, PHENOLICS, PCBs . CT DHS #PH-0563, NY #10778 FL HRS E87143, NJ DEP 59538, NC DNR286, SC 88002, NH 204091-C.

WORK ID CFI BARRE VT STATION #4010
TAKEN 1/28/99
TRANS
TYPE WATER
P.O. #
INVOICE under separate cover

VERIFIED BY:
CERT #MMA064

SAMPLE IDENTIFICATION

01 TRIP BLANK
02 MW-1
03 MW-2
04 MW-4
05 MW-3

TEST CODES and NAMES used on this workorder

8260 PURGEABLE ORGANICS VOA
GRO GASOLINE RANGE ORGANICS

SAMPLE ID TRIP BLANK FRACTION 01A TEST CODE 8260 NAME PURGEABLE ORGANICS VOA
Date & Time Collected 01/28/99 08:00:00 Category WATER

EPA 8260 PURGEABLE ORGANICS

	RESULT	LIMIT		RESULT	LIMIT
Chloromethane	ND	10	o-Xylene	ND	5.0
Bromomethane	ND	5.0	m+p-Xylene	ND	5.0
Vinyl Chloride	ND	2.0	1,2-Dichlorobenzene	ND	5.0
Chloroethane	ND	10	1,3-Dichlorobenzene	ND	5.0
Methylene Chloride	ND	10	1,4-Dichlorobenzene	ND	5.0
1,1-Dichloroethene	ND	5.0	Naphthalene	ND	10
Trichlorofluoromethane	ND	10	n-Propylbenzene	ND	10
1,1-Dichloroethane	ND	5.0	Bromobenzene	ND	5.0
Trans-1,2-Dichloroethene	ND	5.0	Bromchloromethane	ND	5.0
Chloroform	ND	5.0	n-Butylbenzene	ND	10
1,2-Dichloroethane	ND	5.0	sec-Butylbenzene	ND	10
1,1,1-Trichloroethane	ND	5.0	tert-Butylbenzene	ND	10
Carbon Tetrachloride	ND	5.0	2-Chlorotoluene	ND	5.0
Bromodichloromethane	ND	5.0	4-Chlorotoluene	ND	5.0
1,2-Dichloropropane	ND	5.0	1,2-Dibromo-3-chloropropane	ND	5.0
Trichloroethene	ND	5.0	1,2-Dibromoethane	ND	5.0
Dibromochloromethane	ND	5.0	Dibromomethane	ND	5.0
1,1,2-Trichloroethane	ND	5.0	Dichlorodifluoromethane	ND	10
Benzene	ND	5.0	cis-1,2-Dichloroethene	ND	5.0
1,1-Dichloropropene	ND	5.0	1,3-Dichloropropane	ND	5.0
2-2-Dichlorpropane	ND	5.0	1,1,1,2-Tetrachloroethane	ND	5.0
Bromoform	ND	5.0	1,2,3-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	10	1,1,2,2-Tetrachloroethane	ND	5.0
Isopropylbenzene	ND	10	1,2,4-Trichlorobenzene	ND	5.0
Tetrachloroethene	ND	5.0	1,2,3-Trichloropropane	ND	5.0
Methyl tertiary butyl ether	ND	5.0	1,2,4-Trimethylbenzene	ND	10
Toluene	ND	5.0	1,3,5-Trimethylbenzene	ND	10
Chlorobenzene	ND	5.0	cis-1,3-Dichloropropene	ND	5.0
Ethyl Benzene	ND	5.0	trans-1,3-Dichloropropene	ND	5.0
p-Isopropyltoluene	ND	10	Styrene	ND	5.0

Notes and definitions for this report:
DATE RUN 02/09/99
ANALYST JCP
INSTRUMENT B
DIL. FACTOR 1
UNITS ug/L
COMMENTS

ND = Not detected at detection limit

SAMPLE ID MW-1 FRACTION 02A TEST CODE 8260 NAME PURGEABLE ORGANICS VOA
Date & Time Collected 01/28/99 13:45:00 Category WATER

EPA 8260 PURGEABLE ORGANICS

	RESULT	LIMIT		RESULT	LIMIT
Chloromethane	ND	10	o-Xylene	ND	5.0
Bromomethane	ND	5.0	m+p-Xylene	ND	5.0
Vinyl Chloride	ND	2.0	1,2-Dichlorobenzene	ND	5.0
Chloroethane	ND	10	1,3-Dichlorobenzene	ND	5.0
Methylene Chloride	ND	10	1,4-Dichlorobenzene	ND	5.0
1,1-Dichloroethene	ND	5.0	Naphthalene	ND	10
Trichlorofluoromethane	ND	10	n-Propylbenzene	ND	10
1,1-Dichloroethane	ND	5.0	Bromobenzene	ND	5.0
Trans-1,2-Dichloroethene	ND	5.0	Bromchloromethane	ND	5.0
Chloroform	ND	5.0	n-Butylbenzene	ND	10
1,2-Dichloroethane	ND	5.0	sec-Butylbenzene	ND	10
1,1,1-Trichloroethane	ND	5.0	tert-Butylbenzene	ND	10
Carbon Tetrachloride	ND	5.0	2-Chlorotoluene	ND	5.0
Bromodichloromethane	ND	5.0	4-Chlorotoluene	ND	5.0
1,2-Dichloropropane	ND	5.0	1,2-Dibromo-3-chloropropane	ND	5.0
Trichloroethene	ND	5.0	1,2-Dibromoethane	ND	5.0
Dibromochloromethane	ND	5.0	Dibromomethane	ND	5.0
1,1,2-Trichloroethane	ND	5.0	Dichlorodifluoromethane	ND	10
Benzene	ND	5.0	cis-1,2-Dichloroethene	ND	5.0
1,1-Dichloropropene	ND	5.0	1,3-Dichloropropane	ND	5.0
2-2-Dichlorpropane	ND	5.0	1,1,1,2-Tetrachloroethane	ND	5.0
Bromoform	ND	5.0	1,2,3-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	10	1,1,2,2-Tetrachloroethane	ND	5.0
Isopropylbenzene	ND	10	1,2,4-Trichlorobenzene	ND	5.0
Tetrachloroethene	ND	5.0	1,2,3-Trichloropropane	ND	5.0
Methyl tertiary butyl ether	ND	5.0	1,2,4-Trimethylbenzene	ND	10
Toluene	ND	5.0	1,3,5-Trimethylbenzene	ND	10
Chlorobenzene	ND	5.0	cis-1,3-Dichloropropene	ND	5.0
Ethyl Benzene	ND	5.0	trans-1,3-Dichloropropene	ND	5.0
p-Isopropyltoluene	ND	10	Styrene	ND	5.0

Notes and definitions for this report:
DATE RUN 02/09/99
ANALYST JCP
INSTRUMENT B
DIL. FACTOR 1
UNITS ug/L
COMMENTS

ND = Not detected at detection limit

APPLIED GEOLO

SAMPLE ID MW-2 FRACTION 03A TEST CODE 8260 NAME PURGEABLE ORGANICS VOA
Date & Time Collected 01/28/99 12:40:00 Category WATER

EPA 8260 PURGEABLE ORGANICS

	RESULT	LIMIT		RESULT	LIMIT
Chloromethane	ND	10	o-Xylene	ND	5.0
Bromomethane	ND	5.0	m+p-Xylene	ND	5.0
Vinyl Chloride	ND	2.0	1,2-Dichlorobenzene	ND	5.0
Chloroethane	ND	10	1,3-Dichlorobenzene	ND	5.0
Methylene Chloride	ND	10	1,4-Dichlorobenzene	ND	5.0
1,1-Dichloroethene	ND	5.0	Naphthalene	ND	10
Trichlorofluoromethane	ND	10	n-Propylbenzene	ND	10
1,1-Dichloroethane	ND	5.0	Bromobenzene	ND	5.0
Trans-1,2-Dichloroethene	ND	5.0	Bromchloromethane	ND	5.0
Chloroform	ND	5.0	n-Butylbenzene	ND	10
1,2-Dichloroethane	ND	5.0	sec-Butylbenzene	ND	10
1,1,1-Trichloroethane	ND	5.0	tert-Butylbenzene	ND	10
Carbon Tetrachloride	ND	5.0	2-Chlorotoluene	ND	5.0
Bromodichloromethane	ND	5.0	4-Chlorotoluene	ND	5.0
1,2-Dichloropropane	ND	5.0	1,2-Dibromo-3-chloropropane	ND	5.0
Trichloroethene	ND	5.0	1,2-Dibromoethane	ND	5.0
Dibromochloromethane	ND	5.0	Dibromomethane	ND	5.0
1,1,2-Trichloroethane	ND	5.0	Dichlorodifluoromethane	ND	10
Benzene	ND	5.0	cis-1,2-Dichloroethene	ND	5.0
1,1-Dichloropropene	ND	5.0	1,3-Dichloropropane	ND	5.0
2-2-Dichlorpropane	ND	5.0	1,1,1,2-Tetrachloroethane	ND	5.0
Bromoform	ND	5.0	1,2,3-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	10	1,1,2,2-Tetrachloroethane	ND	5.0
Isopropylbenzene	ND	10	1,2,4-Trichlorobenzene	ND	5.0
Tetrachloroethene	ND	5.0	1,2,3-Trichloropropane	ND	5.0
Methyl tertiary butyl ether	ND	5.0	1,2,4-Trimethylbenzene	ND	10
Toluene	ND	5.0	1,3,5-Trimethylbenzene	ND	10
Chlorobenzene	ND	5.0	cis-1,3-Dichloropropene	ND	5.0
Ethyl Benzene	ND	5.0	trans-1,3-Dichloropropene	ND	5.0
p-Isopropyltoluene	ND	10	Styrene	ND	5.0

Notes and definitions for this report:
DATE RUN 02/10/99
ANALYST JCP
INSTRUMENT B
DIL. FACTOR 1
UNITS ug/L
COMMENTS

ND = Not detected at detection limit

SAMPLE ID MW-2 FRACTION 03A TEST CODE GRO NAME GASOLINE RANGE ORGANICS
Date & Time Collected 01/28/99 12:40:00 Category WATER

8015 MODIFIED GRO

	RESULT *	LIMIT
ALIPHATICS	ND	0.010
AROMATICS	ND	0.010

Notes and Definitions for this Report:

DATE RUN 02/03/99
ANALYST SEP
INSTRUMENT V5
DIL. FACTOR 1
UNITS = mg/L

ND = not detected at detection limit

SAMPLE ID MW-4 FRACTION 04A TEST CODE 8260 NAME PURGEABLE ORGANICS VOA
Date & Time Collected 01/28/99 13:00:00 Category WATER

EPA 8260 PURGEABLE ORGANICS

	RESULT	LIMIT		RESULT	LIMIT
Chloromethane	ND	10	o-Xylene	ND	5.0
Bromomethane	ND	5.0	m+p-Xylene	ND	5.0
Vinyl Chloride	ND	2.0	1,2-Dichlorobenzene	ND	5.0
Chloroethane	ND	10	1,3-Dichlorobenzene	ND	5.0
Methylene Chloride	ND	10	1,4-Dichlorobenzene	ND	5.0
1,1-Dichloroethene	ND	5.0	Naphthalene	ND	10
Trichlorofluoromethane	ND	10	n-Propylbenzene	ND	10
1,1-Dichloroethane	ND	5.0	Bromobenzene	ND	5.0
Trans-1,2-Dichloroethene	ND	5.0	Bromchloromethane	ND	5.0
Chloroform	ND	5.0	n-Butylbenzene	ND	10
1,2-Dichloroethane	ND	5.0	sec-Butylbenzene	ND	10
1,1,1-Trichloroethane	ND	5.0	tert-Butylbenzene	ND	10
Carbon Tetrachloride	ND	5.0	2-Chlorotoluene	ND	5.0
Bromodichloromethane	ND	5.0	4-Chlorotoluene	ND	5.0
1,2-Dichloropropane	ND	5.0	1,2-Dibromo-3-chloropropane	ND	5.0
Trichloroethene	ND	5.0	1,2-Dibromoethane	ND	5.0
Dibromochloromethane	ND	5.0	Dibromomethane	ND	5.0
1,1,2-Trichloroethane	ND	5.0	Dichlorodifluoromethane	ND	10
Benzene	ND	5.0	cis-1,2-Dichloroethene	ND	5.0
1,1-Dichloropropene	ND	5.0	1,3-Dichloropropane	ND	5.0
2-2-Dichlorpropane	ND	5.0	1,1,1,2-Tetrachloroethane	ND	5.0
Bromoform	ND	5.0	1,2,3-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	10	1,1,2,2-Tetrachloroethane	ND	5.0
Isopropylbenzene	ND	10	1,2,4-Trichlorobenzene	ND	5.0
Tetrachloroethene	ND	5.0	1,2,3-Trichloropropane	ND	5.0
Methyl tertiary butyl ether	ND	5.0	1,2,4-Trimethylbenzene	ND	10
Toluene	ND	5.0	1,3,5-Trimethylbenzene	ND	10
Chlorobenzene	ND	5.0	cis-1,3-Dichloropropene	ND	5.0
Ethyl Benzene	ND	5.0	trans-1,3-Dichloropropene	ND	5.0
p-Isopropyltoluene	ND	10	Styrene	ND	5.0

Notes and definitions for this report:

DATE RUN 02/10/99
ANALYST JCP
INSTRUMENT B
DIL. FACTOR 1
UNITS ug/L
COMMENTS

ND = Not detected at detection limit

SAMPLE ID MW-4 FRACTION 04A TEST CODE GRO NAME GASOLINE RANGE ORGANICS
Date & Time Collected 01/28/99 13:00:00 Category WATER

8015 MODIFIED GRO

	RESULT	LIMIT
	*	
ALIPHATICS	ND	0.010
AROMATICS	ND	0.010

Notes and Definitions for this Report:

DATE RUN	02/03/99
ANALYST	SEP
INSTRUMENT	V5
DIL. FACTOR	1
UNITS =	mg/L

ND = not detected at detection limit

SAMPLE ID MW-3 FRACTION 05A TEST CODE 8260 NAME PURGEABLE ORGANICS VOA
Date & Time Collected 01/28/99 13:20:00 Category WATER

EPA 8260 PURGEABLE ORGANICS

	RESULT	LIMIT		RESULT	LIMIT
Chloromethane	ND	10	o-Xylene	ND	5.0
Bromomethane	ND	5.0	m+p-Xylene	ND	5.0
Vinyl Chloride	ND	2.0	1,2-Dichlorobenzene	ND	5.0
Chloroethane	ND	10	1,3-Dichlorobenzene	ND	5.0
Methylene Chloride	ND	10	1,4-Dichlorobenzene	ND	5.0
1,1-Dichloroethene	ND	5.0	Naphthalene	ND	10
Trichlorofluoromethane	ND	10	n-Propylbenzene	ND	10
1,1-Dichloroethane	ND	5.0	Bromobenzene	ND	5.0
Trans-1,2-Dichloroethene	ND	5.0	Bromchloromethane	ND	5.0
Chloroform	ND	5.0	n-Butylbenzene	ND	10
1,2-Dichloroethane	ND	5.0	sec-Butylbenzene	ND	10
1,1,1-Trichloroethane	ND	5.0	tert-Butylbenzene	ND	10
Carbon Tetrachloride	ND	5.0	2-Chlorotoluene	ND	5.0
Bromodichloromethane	ND	5.0	4-Chlorotoluene	ND	5.0
1,2-Dichloropropane	ND	5.0	1,2-Dibromo-3-chloropropane	ND	5.0
Trichloroethene	ND	5.0	1,2-Dibromoethane	ND	5.0
Dibromochloromethane	ND	5.0	Dibromomethane	ND	5.0
1,1,2-Trichloroethane	ND	5.0	Dichlorodifluoromethane	ND	10
Benzene	ND	5.0	cis-1,2-Dichloroethene	ND	5.0
1,1-Dichloropropene	ND	5.0	1,3-Dichloropropane	ND	5.0
2-2-Dichlorpropane	ND	5.0	1,1,1,2-Tetrachloroethane	ND	5.0
Bromoform	ND	5.0	1,2,3-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	10	1,1,2,2-Tetrachloroethane	ND	5.0
Isopropylbenzene	ND	10	1,2,4-Trichlorobenzene	ND	5.0
Tetrachloroethene	ND	5.0	1,2,3-Trichloropropane	ND	5.0
Methyl tertiary butyl ether	ND	5.0	1,2,4-Trimethylbenzene	ND	10
Toluene	ND	5.0	1,3,5-Trimethylbenzene	ND	10
Chlorobenzene	ND	5.0	cis-1,3-Dichloropropene	ND	5.0
Ethyl Benzene	ND	5.0	trans-1,3-Dichloropropene	ND	5.0
p-Isopropyltoluene	ND	10	Styrene	ND	5.0

Notes and definitions for this report:
DATE RUN 02/09/99
ANALYST JCP
INSTRUMENT B
DIL. FACTOR 1
UNITS ug/L
COMMENTS

ND = Not detected at detection limit

SAMPLE ID MW-3 FRACTION 05A TEST CODE GRO NAME GASOLINE RANGE ORGANICS
Date & Time Collected 01/28/99 13:20:00 Category WATER

8015 MODIFIED GRO

	RESULT *	LIMIT
ALIPHATICS	ND	0.010
AROMATICS	ND	0.010

Notes and Definitions for this Report:

DATE RUN	02/03/99
ANALYST	SEP
INSTRUMENT	V5
DIL. FACTOR	1
UNITS =	mg/L

ND = not detected at detection limit

TEST CODE 8260 NAME PURGEABLE ORGANICS VOA

EPA METHOD: 8260B: Gas Chromatography/Mass Spectrometry for Volatile Organics.

Reference: Test Methods for Evaluating Solid Wastes: Physical/Chemical Methods. EPA SW-846 Final Update III, 1996. Office of Solid Waste, USEPA.

SOIL RESULTS ARE REPORTED ON A DRY WEIGHT BASIS.

TEST CODE GRO NAME GASOLINE RANGE ORGANICS

METHOD:EPA METHOD 8015 Modified;Gasoline Range Organics

Nonhalogenated Volatile Organics. Test Methods for Evaluating Solid Waste, Physical/Chemical Methods 3rd Edition, Final Update I.

Quantitation for BTEX/MTBE is performed by analysis on a PID detector. Miscellaneous aromatics eluting between o-xylene and 1,2,4-trimethylbenzene are quantitated on the PID detector using the response factor of o-xylene.Miscellaneous aliphatics eluting between 3-methylpentane and isooctane are quantitated on the FID detector using the response factor of n-hexane.

This method meets the specifications of Maine DEP Method 3.1.1.2.6

TOXIKON
15 Wiggins Ave., Bedford, MA 01730
Telephone: (781) 275-3330
Fax: (781) 275-7478

CHAIN OF CUSTODY RECORD

WORK ORDER #: 99-01-565
DUE DATE: 2-11-99

COMPANY: [illegible]
ADDRESS: [illegible]
[illegible]
PHONE #: ( ) [illegible] FAX #: ( ) [illegible]
P.O. #:
PROJECT MANAGER: [illegible]
PROJECT ID/LOCATION: [illegible] #1010

SAMPLE TYPE	CONTAINER TYPE
1. WASTEWATER	P - PLASTIC
2. SOIL	G - GLASS
3. SLUDGE	V - VOA
4. OIL	
5. DRINKING WATER	
6. WATER (GW/MW/SW)	
7. OTHER (SPECIFY)	

ANALYSES: [illegible]; [illegible] (GRO) per Jason B[illegible] 2/2/99

TOXIKON #	SAMPLE IDENTIFICATION	SAMPLE TYPE	CONTAINER SIZE	CONTAINER TYPE	CONTAINER #	SAMPLING DATE	SAMPLING TIME	PRESERVATIVE	Analysis 1	Analysis 2	SPECIAL INSTRUCTIONS/ COMMENTS
1	Trip Blank	GW	[illegible]	GV	2	1/[illegible]	200	[illegible]	X		
2	[illegible]-1		[illegible]		2		145	HCl	X		
	[illegible]-1		[illegible]		1		145	[illegible]		X	pH 7
3	[illegible]-2		[illegible]		2		12[illegible]	HCl	X		
	[illegible]-2		[illegible]		1		12[illegible]	[illegible]		X	pH 7
4	MW-4		[illegible]		2		100	HCl	X		
	[illegible]-4		[illegible]		1		100	[illegible]		X	pH 7
5	[illegible]-5		[illegible]		2		[illegible]	HCl	X		
	[illegible]-5		[illegible]		1		100	[illegible]		X	pH 7

SAMPLED BY:	DATE: - - TIME: - -	QUOTATION #:	
RELINQUISHED BY:	DATE: - - TIME: - -	RECEIVED BY:	DATE: - - TIME: - -
RELINQUISHED BY: USPS	DATE: 1-30-99 TIME: 7-00	RECEIVED FOR LAB BY: [illegible]	DATE: 1-30-99 TIME: 7-00
METHOD OF SHIPMENT: USPS		COOLER TEMPERATURE: 4°C	

☐ RUSH ..... BUSINESS DAY TURN AROUND
☐ ROUTINE

Sample disposal information
Are there any other known or suspected contaminants in these samples other than those listed above?
Yes ____ No ____ If Yes, 1st Known ________

Appendix C

Cost Estimate

Appendix C

Cumberland Farms, Inc. (CFI)
20 South Main Street, Barre, Vermont
VDEC #98-2415
25-Mar-99
Cost Estimate for Confirmatory Site Monitoring and Water Quality Sampling

Task A. Ground Water Sampling (One Round)

Hydrogeologist/Site Manager -	1	hr(s) @	$60.00	per hour	$	60.00
Field Technician -	6	hr(s) @	$35.00	per hour	$	210.00
Disposable Bailer (1.5") -	4	@	$8.89	each	$	35.56
EPA 8260-	5	@	$100.00	each	$	500.00
EPA 8015 TPH-	5	@	$40.50	each	$	202.50
Mileage -	100	mile(s) @	$0.30	per mile	$	30.00
Sampling Equipment -	1	day(s) @	$110.00	per day	$	110.00
				Subtotal	**$**	**1,148.06**

Task B. Preparation of Summary Report

Principal/Senior Hydrogeologist -	0.5	hr(s) @	$85.00	per hour	$	42.50
Hydrogeologist/Site Manager -	1	hr(s) @	$60.00	per hour	$	60.00
Geologist -	3	hr(s) @	$50.00	per hour	$	150.00
Computer/CAD Technician -	2	hr(s) @	$40.00	per hour	$	80.00
Administrative Assistant -	2	hr(s) @	$35.00	per hour	$	70.00
				Subtotal	**$**	**402.50**

Grand Total >>> $ 1,550.56